separated in the fractions containing curium and americium. These fractions were free of rare earth fission products, which were removed from the column much more slowly because of the lesser degree of rare earth complexing with hydrochloric acid.

Additional Chemical Experiments

In some of the later experiments small amounts (approximately 50 counts per minute) of the new alpha-emitter were isolated and further chemical experiments performed in order to characterize somewhat more closely its chemical properties. In these experiments the activity was first separated by carrying on LaF_3 and $La(OH)_3$ and by the use of ion exchange columns as described above. Because of the small amount of activity produced and the short half-life only a few chemical experiments could be done after each bombardment. The results of these tracer experiments are given below. In all cases the distribution of the 45-minute activity into the various fractions was followed by pulse analysis of the 7.1-Mev alpha-particles.

Several attempts were made to oxidize the 45-minute activity to a higher oxidation state. Carrying with zirconium phosphate was used as a test for oxidation to the (IV) state and lack of carrying on LaF_3 as a test for the (VI) state on the basis of analogy with the behavior of other actinide elements in tracer experiments.

Experiments following oxidation with 0.2M ammonium persulfate for 10 min. at 70°C in a solution 1M in HNO_3 and 0.2M in sulfate showed less than 10 percent carrying with zirconium phosphate and greater than 80 percent carrying with LaF_3 precipitated by adding La^{+++} and making the supernatant 1M in HF.

Experiments following oxidation with sodium bismuthate for 5 min. at 60°C in 5M HNO_3 also showed less than 10 percent carrying with zirconium phosphate and greater than 80 percent carrying with LaF_3 from the supernatant made 3M in HCl.